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neer, and the reverse. But whether the reader is proposing to work in the department of science or in that of construction, Dr. Holman's work will prove a most useful and instructive aid. Direct measurements and the theory of errors, the method of least squares and the establishment of criteria, indirect measurements and the best ways of planning their applications, estimates of precision and approximation in the solutions of the most important problems, illustrations of good work, with instructions for special cases, as for calibration of instruments, measurements of efficiency, and other similar matter, make the book one which the engineer and the physicist alike will find valuable, and they may place beside Kohlrausch as an authority, and as a useful supplement, if not a substitute, to that standard work.

The work of the publishers is, as usual, well done. We notice the imprint of Drummond, as its compositor and electrotypist, and take it to be an assurance of careful work in composition, and especially in the mathematical portion of the work. Supplementing the proof-reading of so accurate an author, it gives comforting assurance of freedom from those usually too frequent errors which annoy the reader of the first edition of a work of this kind.

Seventh Annual Report of the State Board of Health of the State of Maine, 1891. 399 p. 8°.

By far the greater part of this report is devoted to the consideration of school hygiene and school-houses in a paper by Dr. A. G. Young, secretary of the Board. This interesting compilation should prove of value in stimulating reform in school methods and school buildings. It clearly and forcibly presents those fundamental principles of individual and public hygiene about which there is substantial agreement among sanitarians. It is humiliating to have to believe that too often those having immediate charge of such matters either disregard these principles or are ignorant of them altogether. Reform can be brought about only by adding line to line and precept to precept.

In the reports of the local boards of health it is observable that cases of typhoid fever occur with ominous frequency in the reports of the small towns where well-water is used for drinking.

The Mound Builders, Their Works and Relics. By Rev. STEPHEN D. PEET, Ph.D. Vol. I. Chicago, Office of the American Antiquarian, 1892. 376 p. 8°.

It appears from the preface that this is the first of a proposed series of five volumes relating to the ancient history of the area of the United States. The author is well known to students of that branch as the founder and editor of the *American Antiquarian*, a specialist's journal, which has survived for many years, and is a repository of much valuable information.

In several respects Dr. Peet's opinions about the mound-builders differ from those current in Washington or Boston. To him, "There was a mound builders' age in this country as distinctive as the Neolithic age in Europe" (p. 31). This age "began some time after the glacial period and ended about the time of the advent of the white man" (p. 34). Geographically, he limits them to the Mississippi Valley, but nevertheless attributes to them the mica mines of South Carolina, the shell-heaps of Florida, and the rock-inscriptions wherever found. He is not in sympathy with the theory that the mound-builders were the ancestors of any of the natives met by the early explorers, but believes they had a civilization and a religion of their own, not to be identified with those of the Redskins of later date. He thinks it likely that the much-discussed "elephant pipe" and "Davenport tablet" attest their knowledge of alphabetic signs and their familiarity with the mammoth and the mastodon; and perhaps he is not wrong when he asserts of these relics (p. 47), "The evidence in their favor is certainly as reliable as that which has reference to the rude stone relics which have been described in Wright's 'Ice Age.'" He himself is not quite convinced that there were any palæolithic people in the Mississippi Valley,—in which he is in accord with some very recent debaters of that question. He says (p. 36): "We imagine that the mound-builders were the first people who occupied the territory after the close of the glacial period." Whence they came he answers as follows: "The same race that built up the

ancient cities of Mexico pushed eastward and colonized the Mississippi Valley" (p. 112).

Having solved to his satisfaction these questions, Dr. Peet proceeds to describe at length, and in part from personal observation, many of the mounds, enclosures, earthworks, implements, ornaments, and other relics which he attributes to this mysterious people. He devotes chapters to their religions, their "water cult," their "solar cult," their symbolism, and their sacrificial rites.

Much of the work, most of it, we believe, has already appeared in the pages of the *American Antiquarian*; but those who sympathize with the opinions of the author will doubtless be pleased to have his contributions collected into a convenient form. He is unquestionably an earnest and honest student of the facts before him, and the conclusions he reaches should, therefore, receive careful consideration.

Some Strange Corners of our Country: The Wonderland of the Southwest. By CHAS. F. LUMMIS. New York, The Century Co. 270 p. Illustrated. 12°.

FOR those readers who have read but a few books of travel on the Southwest, this snug little volume will be quite a revelation. The contents of the twenty-two chapters scarcely contain anything that has been written or sketched before, except a few pages on the Moqui snake dance and Indian superstitions. The thoroughness of his familiarity with Pueblo customs and folk-lore is only equalled by the graphic qualities of his style. In looking about "the strange corners" which the author describes, we are first attracted by a prairie-dog hunt, to which the Navajo Indians resort to fill their larder. White people of the Southwest never think of killing this rodent for food, because it is so difficult to attain with a rifle-ball; but these natives utilize abundant downpours of rain to conduct the floods into their tunnels, and afterwards haul up their dead bodies for a feast. To get rid of the prairie-dog plague, people have proposed to kill them with poisoned apple-quarters. The belief in witchcraft is as potent among the whites and Indians of New Mexico as it ever was during the Middle Ages. Man-slaughter is committed for any act arousing even the suspicion of witchery, and the fact that one-half of the Isleta people are wizards and witches speaks loudly enough. The "finishing an Indian boy" shows principles of education in full force now, which our northern Indians began to drop as early as a century ago. In the chapter, "The American Sahara," the wide waste is delineated in colors none too sharp or cruel. Lieutenant Wheeler is mentioned by mistake as its earliest explorer instead of Lieutenant Whipple. The marvellous wealth of objects presented in Lummis's volume will attract ever and again the class of readers and tourists which seeks instruction rather than pleasure in books of travel, and they will hold it dear as a publication of really scientific value, standing far above most of the productions of our present sensation-loving period of literature.

"The Wanderings of Cochiti" is another very interesting sketch from our "Wonderland" on the upper Rio Grande. It is printed in the *Century Magazine*, January, 1893, and describes and also pictures in photographic reproductions the people, customs, history, and scenery of Cochiti, one of the Quéres pueblos of northern New Mexico and the celebrated gorge of Tyu-on-yi and its rock-carvings in the vicinity of that pueblo. The scene of Banelier's archæologic novel, "The Delight-Makers," is placed in that locality.

First Steps in Etruscan. By F. W. NEWMAN. London, 1892.
The Etrusco Libyan Elements in the Song of the Arval Brethren. By D. G. BRINTON. Philadelphia, 1893.

THESE two pamphlets are the latest contributions to the study of the Etruscan problem. The first is written by the eminent and venerable emeritus professor of University College, London, now close to ninety years of age. It is worth while to find a man willing to take "first steps" in any branch of learning at that time of life. The questions he examines are: By what route came the Etruscans into Italy? He inclines to believe that they came by sea from Asia Minor, and not across the Alps from the northwest, as Taylor teaches. The Etruscan alphabet he con-

siders far older than the Lycian. The Etruscan numerals on the celebrated Toscanelli dice he reads: 1, *mach*; 2, *ki*; 3, *zal*; 4, *sa*; 5, *thu*; 6, *huth*; agreeing in this with Taylor, but at variance with Professor Sayce, who, in the *Academy*, Oct. 15, 1892, prefers the following sequence: *makh*, *huth*, *sa*, *ki*, *thu*, *zal*. Professor Newman does not think the Etruscan language either Aryan or Semitic, but does not proceed farther in its identification, indulging himself in this connection with the following comment on the procedures of another Etruscan student: "Mr. Isaac Taylor treats all languages outside of these two systems as if so specially allied, that he may at pleasure interpret the vocables of any one from any other, and this however different the ages of the two." Other subjects treated are Etruscan concord, words for bronze and brass, attempted translations of epitaphs, the meaning of *kile* and *kal*, etc. Most of this he frankly calls "guessing"; but it is guessing by a method.

The second pamphlet is a reprint from the Proceedings of the American Philosophical Society. Dr. Brinton has published various papers intended to show some ethnic affinity or cultural connection between the Etruscans and the Libyans. Here he takes up the venerable song of the Fratres Arvales—probably the oldest literary monument of Roman antiquity—and seeks to show the indications it presents of a connection with the Berber religions of North Africa. Of course, much of his argument turns on the third line of the song:

Satur fufere Mars limen sali sta Berber;

for which he accepts the rendering of Professor Michel Bréal:

Sata tutere, Mars; clemens satis esto, Berber.

Berber, he points out, is but the reduplication of Ver or Ber, whom Varro mentions as the chief divinity of the Etruscans; a deity who under the same name occupied the same position in the Libyan pantheon, and from whom the name Berber is derived, as well as the word Africa (A-fer-ica). The coincidence, if it is nothing more, is a most curious one, and it would certainly

seem that the Etruscans borrowed their gods from Africa, if they did not come from there themselves.

Theory of Structures and of Strength of Materials. By HENRY T. BOVEY. New York, J. Wiley & Sons, 1893. 817 p. 8°. \$7.50.

CANADIAN authors have been neither numerous nor productive, hitherto, and especially in the fields of science. Sir John Dawson and the able men of the Dominion Surveys, in science, and Goldwin Smith, in history, nevertheless, have led a small body of able men in the performance of work which is most creditable to that now practically independent nation. The appearance of a new work by a Canadian writer, especially in the department of applied science, is thus a somewhat important event; and the volume here offered us will receive a hearty and appreciative welcome by all who are familiar with the standing and ability of its author, and with the work accomplished by him, both professionally and in the development of technical education in his own country. The work itself is an extension, with revision, of the smaller work on Applied Mechanics issued by its author some years ago. It has the form usually considered appropriate to a work of its kind, intended for the use of classes in engineering, in the higher class of schools, such as that of McGill University with which Professor Bovey is connected. It treats of framed structures, their stresses and strains, and their materials, of earthwork and retaining walls, of friction, and of the various forms of bridges and other constructions of the engineer and the architect. The book gives more of modern and exact data than is usual in works of this sort, written, as they are apt to be, by writers drawing upon literature, rather than recent research, for their facts and principles, and unfamiliar, through practical experience, with the actual work of the profession which they assume to instruct. We find here the records of the latest investigations relative to the strength and working qualities of materials, the laws of friction, solid, fluid, and "mediate," and investigations of the direction and magnitude of stresses in the mem-

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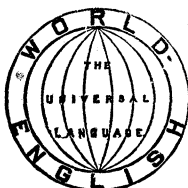
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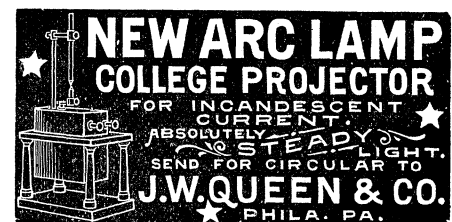
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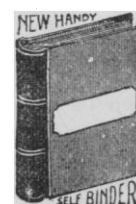
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